resistance value can be reduced, more preferably.

According to the first embodiment, by mixing the inorganic filler 6f that has a mean particle diameter smaller than the mean diameter of the conductive particles 10a as the inorganic filler 6f to be mixed with the thermosetting resin 6m, the reliability can further be improved without hindering the operation of the conductive particles 10a. That is, the conductive particles 10a are placed between the bump 3 and the electrode 5 of the board 4. At this time, even if the inorganic filler 6f is concurrently placed between them, the conductivity is not hindered since the mean particle diameter of the inorganic filler 6f is smaller than the mean diameter of the conductive particles 10a. Furthermore, the elastic modulus of the thermosetting resin 6m is increased and the coefficient of thermal expansion is reduced, improving the reliability of bonding of the IC chip 1 to the board 4.

(Second Embodiment)

A method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and an electronic component unit or module of, for example, a semiconductor device in which the IC chip is mounted on the board by the mounting method, according to a second embodiment of the present invention will be described next.

This second embodiment is made more preferable

than the first embodiment by setting the ratio of mixture of the inorganic filler 6f to be mixed with the anisotropic conductive film sheet 10 that contains a thermosetting resin to 5 to 90 wt% of the insulative thermosetting resin of, for example, the insulative thermosetting epoxy resin 6m. When the ratio is lower than 5 wt%, the mixture of the inorganic filler 6f is meaningless. When the ratio exceeds 90 wt%, the adhesive strength is extremely reduced, and it is difficult to form a sheet, leading to a disadvantage. As an example, from the point of view of maintaining high reliability, it is preferable to set the ratio to 20 to 40 wt% in the case of a resin board and to 40 to 70 wt% in the case of a ceramic board. In the case of a glass epoxy board, the coefficient of linear expansion of the sheet encapsulant can be considerably reduced at a ratio of about 20 wt%, producing an effect on the resin board. The ratio is set about half the percentage by weight in terms of volume percentage or in the proportions of 1 part epoxy resin to about 2 parts silica in terms of specific gravity. In the normal case, the ratio of mixture of this inorganic filler 6f is determined by the manufacturing conditions in forming the thermosetting resin 6m into a sheet, by the elastic modulus of the board 4, and finally by the result of a reliability test.

By mixing the inorganic filler 6f at the

aforementioned ratio of mixture with the anisotropic conductive film sheet 10 that contains a thermosetting resin, the elastic modulus of the thermosetting resin 6m of the anisotropic conductive film sheet 10 can be increased, and the reliability of bonding of the IC chip 1 to the board 4 can be improved by reducing the coefficient of thermal expansion. Moreover, the ratio of mixture of the inorganic filler 6f can be determined so that the material constant of the thermosetting resin 6m, i.e., the elastic modulus and the coefficient of linear expansion are optimized according to the material of the board 4. It is to be noted that the coefficient of linear expansion tends to be reduced although the elastic modulus is increased as the ratio of mixture of the inorganic filler 6f is increased.

The first embodiment and the second embodiment have the advantages that the employed anisotropic conductive film sheet 10, which is not liquid but solid, is easy to handle and is able to be formed of polymer since no liquid component exists, allowing the objective one with a high glass transition point to be easily formed.

With reference to Fig. 1A through Fig. 1G, Fig. 2A through Fig. 2C and Fig. 6 and Fig. 7 described later, the formation of the anisotropic conductive film sheet 10 that contains the thermosetting resin as one example of the